STATE OF WASHINGTON

STATE BUILDING CODE COUNCIL

Washington State Energy Code Development

Standard Energy Code Proposal Form

Jan 2022

Log No. 21-GP3-013

Code being amended: ☒ Commercial Provisions ☐ Residential Provisions

Code Section # _C404.2.1.1, C404.2.1.2, C404.2.1.3, C404.2.1.3.1, C404.2.1.4, & C404.2.1.5_

Brief Description:

Delete section C404.2.1.1 (heat pump water heating requirements), C404.2.1.2 (hot water storage), C404.2.1.3 (system requirements), C404.2.1.3.1 (mixing valves), C404.2.1.4 (supplemental water heating), and C404.2.1.5 (fault detection) in entirety. This newly added section of the 2021 WSEC-C did not exist in the previous 2018 edition.

Proposed code change text: (Copy the existing text from the Integrated Draft, linked above, and then use underline for new text and ~~strikeout~~ for text to be deleted.)

~~**C404.2.1.1 Primary heat pump system sizing.** The system shall include a primary service output of 50 percent load at 40°F (4°C) dry bulb or wet bulb outdoor air temperature for air-source heat pumps, or 44°F (7°C) ground temperature for ground-source heat pumps that provides sufficient hot water as calculated using the equipment manufacturer's selection criteria or another approved methodology. Electric air source heat pumps shall be sized to deliver no less than 25 percent of the calculated demand for hot water production during the peak demand period when entering dry bulb or wet bulb outdoor air temperature of 24°F (-4°C). The remaining primary service output may be met by fossil fuel, electric resistance, or heat pump water heating systems.~~

~~**Exception**: Twenty-five percent sizing at entering dry bulb or wet bulb air temperature of 24°F (-4°C) is not required for air-source heat pumps located in a below-grade enclosed parking structure or other ventilated and unconditioned space that is not anticipated to fall below 40°F (4°C) at any time.~~

~~**C404.2.1.2 Primary hot water storage sizing.** The system shall provide sufficient hot water to satisfy peak demand period requirements.~~

~~**C404.2.1.3 System design.** The service water heating system shall be configured to conform to one of the following provisions:~~

~~1. For single pass heat pump water heaters, temperature maintenance heating provided for reheating return water from the building's heated water circulation system shall be physically decoupled from the primary service water heating system storage tank(s) in a manner that prevents destratification of the primary system storage tanks. Temperature maintenance heating is permitted to be provided by electric resistance, fossil fuel, or a separate dedicated heat pump system.~~

~~2. For multi-pass heat pump water heaters, recirculated temperature maintenance water is permitted to be returned to the primary water storage tanks for reheating.~~

~~3. For unitary heat pump water heaters, located in conditioned space, are permitted, where they are sized to meet all calculated service water heating demand using the heat pump compressor, and not supplementary heat.~~

~~**C404.2.1.3.1 Mixing valve.** A thermostatic mixing valve capable of supplying hot water to the building at the user temperature setpoint shall be provided, in compliance with requirements of the Uniform Plumbing Code and the HPWH manufacturer's installation guidelines. The mixing valve shall be sized and rated to deliver tempered water in a range from the minimum flow of the temperature maintenance recirculation system up to the maximum demand for the fixtures served.~~

~~**C404.2.1.4 Supplemental water heating.** Total supplemental water heating equipment shall not have an output capacity greater than the primary water heating equipment at 40°F (4°C) entering dry bulb or wet bulb outdoor air temperature for air-source heat pumps or 44°F (7°C) ground temperature for ground-source heat pumps. Supplemental heating is permitted for the following uses:~~

~~1. Temperature maintenance of heated-water circulation systems, physically separate from the primary service water heating system. Temperature maintenance heating capacity shall be no greater than the primary water heating capacity at 40°F (4°C) dry bulb or wet bulb outdoor air temperature for air-source heat pumps or 44°F (7°C) ground temperature for ground-source heat pumps.~~

~~2. Defrost of compressor coils.~~

~~3. Heat tracing of piping for freeze protection or for temperature maintenance in lieu of recirculation of hot water.~~

~~4. Backup or low-ambient temperature conditions, where all of the following are true:~~

~~4.1. The supplemental heating capacity is no greater than the primary service water heating capacity at 40°F (4°C) dry bulb or wet bulb outdoor air temperature for air-source heat pumps or 44°F (7°C) ground temperature for ground-source heat pumps.~~

~~4.2. During normal operations, the supplemental heating is controlled to operate only when the entering air temperature at the air-source HPWH is below 40°F (4°C), and the primary HPWH compressor continues to operate together with the supplemental heating.~~

~~4.3. The primary water heating equipment cannot satisfy the system load due to equipment failure or entering air temperature below 40°F (4°C).~~

~~**C404.2.1.5 System fault detection.** The control system shall be capable of and configured to send automatic error alarms to building or maintenance personnel upon detection of equipment faults, low leaving water temperature from primary storage tanks, or low hot water supply delivery temperature to building distribution system.~~

Purpose of code change:

This proposal begins to remedy conflicting provisions in the WSEC-C that are preempted by federal law (EPCA).

Section C404.2.1 (heat pump water heating mandate) conflicts with EPCA and a separate proposed aims to strike it. This proposal aims to strike all subsection associated with C404.2.1 because the sole purpose of each subsection is to ensure that heat pump water heating and all system components are sized in a way to limit the use of supplemental water heating. However, supplemental water heating appliances are covered products (42 U.S.C. § 6295) thus limiting their use conflicts with EPCA.

For any covered product, "EPCA, 42 U.S.C. § 6297(c), expressly preempts State and local regulations concerning the energy use" California Restaurant Ass'n v. City of Berkeley (9th Cir. 2023).

Your amendment must meet one of the following criteria. Select at least one:

- ☐ Addresses a critical life/safety need.
- ☐ The amendment clarifies the intent or application of the code.
- ☐ Addresses a specific state policy or statute. (Note that energy conservation is a state policy)
- ☒ Consistency with state or federal regulations.
- ☐ Addresses a unique character of the state.
- ☐ Corrects errors and omissions.

Check the building types that would be impacted by your code change:

- ☐ Single family/duplex/townhome
- ☐ Multi-family 1 – 3 stories
- ☒ Multi-family 4 + stories
- ☒ Commercial / Retail
- ☒ Institutional
- ☒ Industrial

Your name	Gregory Johnson	Email address	gregory.johnson@avistacorp.com
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Economic Impact Data Sheet

Is there an economic impact: ☐ Yes ☒ No

Briefly summarize your proposal's primary economic impacts and benefits to building owners, tenants, and businesses. If you answered "No" above, explain your reasoning.

In reference to the currently in force 2018 WSEC-C, there is zero economic impact as this proposal rolls back changes that the 2021 WSEC-C would have imposed. This proposal averts any cost increases that this section of the 2021 WESC-C would have created.

Provide your best estimate of the **construction cost** (or cost savings) of your code change proposal? (See OFM Life Cycle Cost **Analysis tool** and **Instructions;** use these **Inputs**. **Webinars on the tool can be found Here and Here**)

$0 /square foot (For residential projects, also provide **$0 / dwelling unit**)

Show calculations here, and list sources for costs/savings, or attach backup data pages

Provide your best estimate of the **annual energy savings** (or additional energy use) for your code change proposal?

0 KWH/ square foot (or) **0 KBTU/ square foot**

(For residential projects, also provide **0 KWH/KBTU / dwelling unit**)

Show calculations here, and list sources for energy savings estimates, or attach backup data pages

In reference to the currently in force 2018 WSEC-C, there is zero energy impact as this proposal rolls back changes that the 2021 WSEC-C would have imposed.

List any **code enforcement** time for additional plan review or inspections that your proposal will require, in hours per permit application:

Zero impact to plan review or inspection time or process.

Small Business Impact. Describe economic impacts to small businesses:

This proposal averts any cost increases that this section of the 2021 WESC-C would have created. Zero small business impact in relation to the currently in force 2018 WSEC-C.

Housing Affordability. Describe economic impacts on housing affordability:

This proposal averts any cost increases that this section of the 2021 WESC-C would have created. Zero housing affordability impact in relation to the currently in force 2018 WSEC-C.

Other. Describe other qualitative cost and benefits to owners, to occupants, to the public, to the environment, and to other stakeholders that have not yet been discussed:

Reduces legal risk and uncertainty to building officials, municipalities, and the state related to conflicting provisions in this code that are preempted by federal law.